B.5 Environmental Monitoring

MICHIGAN DISPOSAL WASTE TREATMENT PLANT (MDWTP)
MID 000 724 831
2016 PERMIT APPLICATION

FORM EQP 5111 ATTACHMENT TEMPLATE B5
ENVIRONMENTAL MONITORING PROGRAMS

This document is an attachment to the Michigan Department of Environmental Quality's (DEQ) *Form EQP 5111, Operating License Application Form for Hazardous Waste Treatment, Storage, and Disposal Facilities*. See the instructions for Form EQP 5111 for details on how to use this attachment. All references to Title 40 of the Code of Federal Regulations (40 CFR) citations specified herein are adopted by reference in R 299.11003.

The administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), R 299.9611 establishes requirements for the environmental monitoring programs for hazardous waste management facilities. Owners and operators of hazardous waste treatment, storage, or disposal facilities must develop an environmental monitoring program capable of detecting a release of hazardous waste or hazardous waste constituents from the facility to groundwater, air, or soil.

This license application template addresses requirements for an environmental monitoring program for hazardous waste management units and the hazardous waste management facility for the Michigan Disposal Waste Treatment Plant facility. The template includes either a monitoring program description or a demonstration for a waiver from the monitoring requirements in accordance with R 299.9611(3)(a) and (b) and R 299.9611(4) as indicated below:

Groundwater Monitoring Program *(Check as appropriate)*

☒ R 299.9612 compliance monitoring program and sampling and analysis plan for one or more units
☐ Waiver for one or more units

If appropriate, both boxes may be checked if different monitoring programs and waivers apply to the units at the facility.

Ambient Air Monitoring Program (Check as appropriate)

☒ Monitoring program and sampling and analysis plan

☐ Waiver

Annual Soil Monitoring Program (Check as appropriate)

☐ Monitoring program and sampling and analysis plan

☒ Waiver

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B5.A GROUNDWATER MONITORING PROGRAM

[R 299.9611(2)(b) and (3), R 299.9612, and R 299.9629 and 40 CFR, Part 264, Subpart F, except 40 CFR §§264.94(a)(2) and (3), (b), and (c), 264.100, and 264.101]

This section describes the facility's unit-specific groundwater monitoring program as outlined in Table B5.A.1. The basis for determining the groundwater monitoring program for each unit described below is provided in the, Hydrogeological Report, attached separately to this application, which was prepared in accordance with R 299.9506.

All samples collected for environmental monitoring are collected, transported, analyzed, stored, and disposed by trained and qualified individuals in accordance with the QA/QC Plan. The QA/QC Plan should at a minimum include the written procedures outlined in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Third Edition, Chapter 1 (November 1986), and its Updates.

B5.A.1 Unit-Specific Groundwater Monitoring Program

Table B5.A.1 Groundwater Monitoring Program

Unit	Name of Unit Subject to Monitoring[1]	Conditional Non-LDF Waiver[2]	No Migration Waiver[3]	Detection Monitoring[4]	Compliance Monitoring[5]	Corrective Action Monitoring[6]
1	MDWTP	NA	NA	YES	NA	NA
2	SECSA	NA	NA	YES	NA	NA

B5.A.2 Groundwater Monitoring Program Waiver

[R 299.9611(3)]

B5.A.2(a) Other Units

[R 299.9611(3)(a)]

The *MDWTP* facility is conducting response activities in the area of *South East Container Storage Area (SESCA) and the waste treatment plant.* The response activities include groundwater monitoring that demonstrates compliance with the provisions of Part 111 of Act 451 and the Part 111 Rules.

B5.A.3 General Groundwater Monitoring Requirements

[R 299.9612 and 40 CFR §§264.97 and 264.91(b)]

The MDWTP facility will comply with the requirements for a groundwater monitoring program by implementing the program described in this section. This program was developed to satisfy the requirements of R 299.9612 and R 299.9629 and 40 CFR §§264.98 and 264.99, except 40 CFR

§§264.94(a)(2) and (3) and 264.94(b) and (c). The basis for determining the groundwater monitoring program for each unit is provided in Template B3, Hydrogeologic Report, of this application that was prepared in accordance with R 299.9506.

B5.A.3(A) SAMPLING AND ANALYSIS PLAN
[R 299.9611(2)(a)]

A sampling and analysis plan for groundwater monitoring at Michigan Disposal Waste Treatment Plant is included in the QA/QC Plan. The sampling and analysis plan was prepared in accordance with the requirements specified in R 299.9611(2)(a). All sampling and analysis performed pursuant to this application will be consistent with the QA/QC Plan. All samples for the purpose of environmental monitoring will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the QA/QC Plan.

B5.A.3(B) DESCRIPTION OF WELLS
[R 299.9612 and 40 CFR §264.97(a), (b), and (c)]

There are two groundwater monitoring programs for the Michigan Disposal Waste Treatment Plant (MDWTP). The first is designed to detect impacts from the waste treatment plant and North Container Storage Area (NCSA) within the uppermost aquifer. This monitoring program consists of 6 wells (2 upgradient and 4 downgradient) numbered OB-18, OB-19R, OB-21, OB-23R, OB-36 and OB-47. These wells are completed in the uppermost usable aquifer, which is the glacial sand and gravel deposit beneath the clay till deposit that underlies this area. The water-bearing surficial sand unit that overlies the clay was removed during construction of the treatment plant and replaced with clay; therefore this unit is not the target for this monitoring program. Wells OB-21, OB-23R, OB-36 and OB-47 are downgradient from the treatment plant at a spacing appropriate to monitor potential impacts from the MDWTP. The two upgradient wells, OB-18 and OB-19R represent the quality of background water that has not be affected by leakage from a regulated unit as they along the north property boundary. The four downgradient wells represent the quality of groundwater passing the point of compliance as close as practicable to the south boundary of the MDWTP which allow for detection of contamination when hazardous constituents have migrated from the waste management area to the uppermost usable aquifer.

Maps showing the locations of the aquifer wells and the SECSA wells are included with this template. The table below summarizes the monitoring well information for the two well networks.

The wells were installed in borings drilled with a hollow-stem auger and were constructed one of three ways. Wells OB-18 and OB-21 are composed of PVC screens and PVC riser pipes with the screened interval annular space containing silica sand and sealed off with bentonite pellets and then non-shrinking cement grout to the surface. Wells OB-36 and OB-47 are constructed with stainless steel screens and galvanized steel casing with the annular space consisting of silica sand, bentonite slurry and non-shrinking cement grout. Wells OB-19R and OB-23R are constructed with stainless steel screens and casing, with the annular space filled with silica sand, bentonite and a pH-neutral grout. All wells are equipped with lockable protective casings.

The second monitoring program is designed to detect impacts from the Southeast Container Storage Area (SECSA). At this location, the surficial water-bearing sand deposit containing a perched water table has not been removed and is therefore the unit targeted for groundwater monitoring. The active operations performed in the SECSA are the storage of liquid and solid hazardous waste that is treated at the MDWTP. Solid containerized waste is stored on the asphalt surface while waste containing free liquids is stored on cement pads with secondary containment. In the past, the SECSA was the location of a Thermal Desorption Unit (TDU) used to recycle refinery waste, although these operations have ceased and the TDU removed and the area decontaminated. The historical groundwater flow direction in this unit was to the east, however the flow direction has reversed in recent years.

Well locations for monitoring the SECSA includes wells P-1, P-2R, P-3R, P-4R, P-5 & P-7. Well P-5 is used for water levels only. These wells are completed at the bottom of the surficial sand unit within the rather thin saturated zone of the perched water table. The wells are placed around each side of the area providing coverage in any direction of groundwater flow at approximately 150-foot intervals.

All of the SECSA wells are constructed with PVC screens and casing. The screened interval is surrounded by silica sand and sealed from the surface with hydrated bentonite hole-plug and quick grout. Each well has a lockable protective casing.

Maps showing the locations of the aquifer wells and the SECSA wells are included with this template. The following table summarizes the monitoring well information for the two well networks.

MDWTP GROUND WATER WELL INFORMATION

WELL ID	MONITORING PROGRAM	T.O.C. ELEVATION	SCREEN ELEVATION	WELL DEPTH	UNIT SCREENED	WELL PAIR
OB-18	MDWTP	703.11	589.2	114	AQUIFER ROCK	--
OB-19R	MDWTP	709.17	585.6	124	AQUIFER ROCK	--
OB-21	MDWTP	705.00	600.9	104	AQUIFER SAND	OB-36
OB-23A	MDWTP	702.67	577.5	125	AQUIFER SAND	--
OB-36	MDWTP	702.13	572.1	130	AQUIFER ROCK	OB-21
OB-47	MDWTP	702.70	594.3	108	AQUIFER SAND	--
P-1	SECSA	703.97	685.0	16	SURFICIAL SAND	
P-2R	SECSA	706.98	685.4	19	SURFICIAL SAND	
P-3R	SECSA	705.96	683.0	20	SURFICIAL SAND	
P-4R	SECSA	706.47	684.9	19	SURFICIAL SAND	
P-5	SECSA	702.12	684.0	14	SURFICIAL SAND	
P-7	SECSA	706.30	683.3	20	SURFICIAL SAND	

B5.A.3(C) PROCEDURE FOR ESTABLISHING BACKGROUND QUALITY
[R 299.9612 and 40 CFR §264.97(a)(1) and (g)]

MDWTP Aquifer Program

The background for monitoring of the uppermost usable aquifer (MDWTP program) is calculated as intrawell using the methods described below. An intrawell background was selected because; 1) there is natural spatial variability between upgradient and downgradient locations due to changing hydrogeological conditions and, 2) the determination that there is no existing contamination in the groundwater due to a release from waste management units at the site. The intrawell background for parameter at each well is calculated by a moving window of 8 sample results that lag 6 to 7 years prior to the current year. Then the calculation of the background quality for the 2 classes of parameters is described as follows:

Primary Parameters are volatile organic compounds that are not naturally occurring and thus are presumed to be non-detectable in background quality. In this case the detection limit is the background for evaluation purposes.

Secondary Parameters are naturally occurring metals, major ions and indicator parameters. The intrawell background quality statistics are calculated from the moving window of 8 samples described above. The background statistics and the method of calculation of the secondary parameters is based on the degree of censorship of each parameter at each well. The secondary parameter list includes parameters which are highly censored (at least half of the values are below detection limits), those which are moderately censored (more than half the values are above detection) and those which are essentially all above method detection limits. Some parameters exhibit varying degrees of censorship at different wells.

If the background data for a parameter contains at least five detectable background values, but contains some non-detects, the non-detects will be alternately assigned values of zero and the detection limit. If all of the background values are above detection, the background quality statistics will be calculated from the background data as is. If half or more of the intrawell background measurements are below detection limits (4 or more BDL values), then the background quality is defined by the proportion of values above method detection limits.

SESCA Program
The background groundwater quality for the SECSA was established from the first eight samples collected from each of the five monitoring wells around the SECSA. The first four sampling events were conducted in November of 2009 before any TDU activities or storage of liquid wastes began. Following these initial four samples, four quarterly samples were collected during the months of March, May, August and November of 2010. As these samples were collected during active operations, it was shown that there were no impacts to the ground water in 2010 and as a result the data was considered background.

Based on an evaluation of the background quality data is was decided to define background using intrawell procedures. This decision was based on the following reasons; 1) The vast majority of parameters do not have any data above the detection limits and the distinction between interwell and intrawell is irrelevant for these parameters, 2) The spatial variation for parameters that are present at measurable concentrations is very large posing significant problems for interwell statistics, and 3) although two wells (P-2R and P-4R) were upgradient at that time, these wells were immediately adjacent to the TDU and thus could not be to remain representative of native background conditions. Although the TDU operation was discontinued, the flow direction in the surficial unit has turned out to be quite variable, which is another good reason to define background using intrawell procedures. The statistical definition of background was based on the degree of censorship as described above for the MDWTP monitoring program.

B5.A.3(D) STATISTICAL PROCEDURES
[R 299.9612 and 40 CFR §§264.97(h) and 264.97(i)(1), (5), and (6)]

MDWTP Aquifer Program
The methods to be used for statistical analyses of all primary and secondary parameters that have an intrawell background as defined above are described as follows:

Primary Parameters - For each primary parameter, any measured concentration of any parameter which is above the laboratory reported detection limit is considered an apparent statistically significant increase. This is essentially a non-parametric prediction limit test that is suitable for highly censored data for which little or no information regarding the underlying data distribution is available. Detection limits are those recommended by MDEQ in the most recent version of Operational Memo Gen-8. An apparent statistically significant increase will initiate quadruplicate resampling for confirmation of the affected parameter(s), in accordance with the operating license. If the statistical failure is repeated, then a statistically significant increase is confirmed. If the apparent increase is not confirmed, then normal detection monitoring will be resumed.

Secondary Parameters - The statistical analysis of secondary parameters will be conducted by one of two statistical tests depending on the degree that the intrawell background data are censored. If more than half the data are above method detection limits then a control chart approach will be used. If at least half the background data are below detection limits, a test of proportions will be used to analyze the data.

The statistical evaluation of moderately censored or uncensored secondary parameters will be conducted using intrawell statistical comparisons via a control chart approach. This method assumes a normal distribution of the data but is robust to moderate deviations to normality. The combined Stewart-CUSUM control chart will be used to analyze the statistical significance of the measured concentrations of secondary parameters. This approach consists of two statistical tests designed to detect different types of evidence of an apparent statistically significant change in the concentration of a water quality parameter. The Stewart limit is designed to detect a sharp increase in the concentration of a monitoring parameter in a single sample. The CUSUM limit is designed to detect gradual increases in the concentration of a parameter over time. The two techniques are used as separate statistical tests. That is, failure of either test alone (or both) signals an apparent statistically significant increase for a given parameter. The Stewart control chart compares a detection monitoring concentration of a parameter to the intrawell background mean plus a selected number of standard deviations. The test is performed by calculating the standardized mean, Z, for the detection monitoring concentration. As individual samples are collected during each detection monitoring event, the standardized mean for each measured parameter is calculated by:

$$Z = (xm - xb)/sb$$

where:
xb is the intrawell background mean
xm is the measured concentration during detection monitoring
sb is the standard deviation of the intrawell background

The value of Z is then simply compared to a selected value, U, which represents the number of standard deviations from the intrawell mean. The Shewhart limit (U), or upper control limit will be 4.5, as recommended in the Interim Final Guidance for Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities (USEPA, 1989). The statistical test is performed by simply comparing the value of Z to the value of U. If Z is greater than U then it is concluded that an apparent statistically significant increase has occurred.

The CUSUM control chart is designed to detect a trend of increasing concentrations over time that is not abrupt enough to exceed the Shewhart limit. In the CUSUM procedure, the cumulative sum of the values for Z - k are tabulated over time, each time a round of samples are analyzed. The value for Z is computed as described above, and k is a selected parameter. During each analysis subsequent to the background determination period, a value for Z - k is computed and added to the previous total. As long as the cumulative total of Z - k is a negative number the cumulative sum (S) remains zero. As positive values accumulate, the value for S is compared to a selected value, h. If S is greater than h, then an apparent statistically significant event has occurred. The values used for k and h are k = 1 and h = 5, respectively, as recommended (USEPA, 1989).

For parameters that contain at least half non-detectable concentrations in the intrawell background database, a statistical test to determine the significance of the proportion of detectable occurrences is appropriate. The test of proportions, which is based on the binomial distribution, is statistical test suited to this purpose. This statistical procedure analyzes the significance of an increase in the rate of detectable occurrences over time.

To implement the test of proportions, the proportion of detectable occurrences during the 8 background samples will be compared to the rate of detectable occurrences in the most recent 4 detection monitoring samples. The statistic is computed by the equation:

$$Z^* = \frac{Pm - Pb}{[p(1-p)(1/Nm + 1/Nb)]0.5}$$

where:

Pm = proportion of detectable concentrations in the last four detection monitoring samples
Pb = proportion of detectable concentrations in the eight intrawell background samples
Nm = number of detection monitoring samples (4)
Nb = number of background samples (8)
p = weighted proportion defined as:

$$p = \frac{nm + nb}{Nm + Nb}$$

where:

nm = number of detection monitoring samples above method detection limits
nb = number of background samples above method detection limits

The value of Z* is then simple compared to a critical value, Zc, obtained from standard tables for the normal variate, Z, at the desired level of significance. The test will be conducted at the 0.05 level of significance, therefore Zc is equal to 1.645. Any value of Z* greater than Zc signals an apparent statistically significant increase for that parameter. To guard against the unlikely possibility of a large increase in a single secondary parameter going unflagged by the proportions test, MDWTP will consider any concentration of a secondary parameter that is greater than 10 times the background concentration (or the reported detection limit for highly censored parameters) as a default violation of the statistical tests described above. This will ensure that clearly anomalous data are evaluated.

MDWTP evaluates the secondary parameters as follows. If there is a statistically significant increase in any two secondary parameters at a particular monitoring well (i.e. two failures of the test of proportions or a combination of control chart and proportions test failures), then resampling in quadruplicate would be initiated to confirm the suspected increase. Two parameters are required because it is highly unlikely that only one parameter would increase in the event of a release and some of the parameters (e.g. sulfate, iron) are more likely to change due to non-release related phenomena. Confirmation would be completed if both failures are repeated. If the increase is not confirmed then the mean values of the quadruplicate sampling replace the results of the anomalous (unconfirmed) values within the database.

SESCA Program
The methods to be used for statistical analyses parameters that have an intrawell background as defined above are described as follows:

For volatile organics, semi-volatile organics and metals with greater than 50% non-detects in the background, the non-parametric prediction limit test will be used. The non-parametric prediction limit is the detection limit for parameters that were not detected during the background period and the highest concentration during background for parameters that had less than 50% detectable values during the background period. This is an appropriate test for highly censored data as little is known about the underlying distribution. Detection limits are those recommended by MDEQ in the most recent version of Operational Memo Gen-8. The use of intrawell statistics negates the need to account for seasonal or spatial variability.

For the other metals (less than 50% non-detects) the background mean and standard deviation is computed accounting for non-detects and intrawell control charts will be used to evaluate the data. The control chart method described above is used to evaluate the metals data and any single apparent statistically significant increase must be addressed by quadruplicate resampling.

B5.A.4 DETECTION MONITORING PROGRAM

[R 299.9612 and 40 CFR §§264.91(a)(4) and 264.98]

The basis for determining the detection monitoring program for each unit is provided in Template B3, Hydrogeologic Report, of this application that was prepared in accordance with R 299.9506.

B5.A.4(A) INDICATOR PARAMETERS, WASTE CONSTITUENTS, AND REACTION PRODUCTS

[R 299.9506(3)(a) and (f), R 299.9506(4)(a), and R 299.9612 and 40 CFR §264.98(a)]

MDWTP Aquifer Program
The following table lists the parameters that are monitored in the uppermost aquifer upgradient and downgradient of the MDWTP. The list was developed from landfill leachate data and an extensive evaluation of geochemical behavior because any release from the landfill or the treatment plant would be highly attenuated by the thick sequence of low permeability clay till beneath the waste management units. The primary parameters are highly mobile volatile organic compounds (VOCs), including breakdown products that are among the most commonly seen VOCs in the waste streams accepted by MDWTP. These mobile VOCs would be expected to be among the first indicators that a release of waste or waste constituents have penetrated they clay till layer. The secondary parameters were selected based on the background concentrations in the groundwater and the geochemical behavior of each individual parameter.

MDWTP Aquifer Monitoring Parameter List

A. Primary Parameters

Benzene	1,2 Dichlorobenzene	Xylene
1,2 Dichloroethane	1,2 Dichloroethene	Ethylbenzene
Methylene Chloride	Toluene	Trichloroethene
1,1,1 Trichloroethane	Vinyl Chloride	1,1 Dichloroethane
PCB-1016[1]	PCB-1221[1]	PCB-1231[1]
PCB-1242[1]	PCB-1248[1]	PCB-1254[1]
PCB-1260[1]		

B. Secondary Parameters

Potassium	Sodium	Nickel
Chromium(t)	Lead	Molybdenum
Sulfate	Chloride	Bicarbonate
Carbonate	Arsenic	Cyanide[4]
Nitrate	Nitrite	Fluoride
Total Phenolics	Total Organic Carbon	Iron

Note:	PCB's to be analyzed in samples from wells OB-21 and OB-23A only.

As the primary parameters are not naturally occurring, the background is below detection and no background statistics are necessary. For the secondary parameters, the moving window of eight intrawell sample results are used to compute background statistics. These statistics include the mean, standard deviation, coefficient of variation, and proportion of non-detects. Each year the background statistics are recalculated and submitted to MDEQ.

SESCA Program

Following tables contain the quarterly, semi-annual and annual monitoring parameter lists for the SECSA monitoring program. The list is extensive because of the vast number of wastes that can be stored in the SECSA. Unlike the aquifer that is protected by clay, the surficial sand unit is directly below the pavement and thus waste or waste constituents would not be significantly attenuated if released to this unit. The quarterly parameters are targeted for TDU wastes; although the TDU has been removed it did operate for several years. As described above, non-parametric tests are applied to VOCs, SVOCs and metals as these are never or rarely detected in background samples.

MDWTP SECSA Monitoring Parameters

Parameter	Monitoring Frequency	Detection Limit (mg/L)	Parameter	Monitoring Frequency	Detection Limit (mg/l)
Benzene	Quarterly	0.001	2-Chloroethylvinyl Ether	Annual	0.001
Ethyl Benzene	Quarterly	0.001	Chloroform	Annual	0.001
Toluene	Quarterly	0.001	Chloromethane	Annual	0.005
Total Xylene	Quarterly	0.003	Cyclohexane	Annual	0.005
Benzo(a)pyrene	Quarterly	0.001	2-Hexanone	Annual	0.005
Benzo(a)anthracene	Quarterly	0.001	Dibromodifluoromethane	Annual	0.001
Benzo(b)fluoranthene	Quarterly	0.001	Dibromochloromethane	Annual	0.001
Benzo(k)fluoranthene	Quarterly	0.001	Dibromomethane	Annual	0.001
Dibenz(a,h)anthracene	Quarterly	0.002	Diethyl ether	Annual	0.005
Anthracene	Quarterly	0.001	Diisopropyl Ether	Annual	0.005
Chrysene	Quarterly	0.001	1,2 Dichlorobenzene	Annual	0.001
Fluorene	Quarterly	0.001	1,3 Dichlorobenzene	Annual	0.001
3-methylcholanthrene	Quarterly	NA	1,4 Dichlorobenzene	Annual	0.001
Napthalene	Quarterly	0.001	Dichlorodifluoromethane	Annual	0.005
Phenanthrene	Quarterly	0.001	1,1-Dichloroethane	Annual	0.001
Pyrene	Quarterly	0.001	1,2-Dichloroethane	Annual	0.001
pH (field)	Quarterly	---	1,1-Dichloroethene	Annual	0.001
Conductance (field)	Quarterly	---	1,2-Dichloroethene	Annual	0.001
Calcium	Semi-Annual	1	1,2 Dichloropropane	Annual	0.001
Magnesium	Semi-Annual	1	1,3 Dichloropropene	Annual	0.001
Sodium	Semi-Annual	1	Ethyltertiarybutylether	Annual	0.005
Potassium	Semi-Annual	0.1	Hexachloroethane	Annual	0.005
Iron	Semi-Annual	0.02	Isopropylbenzene	Annual	0.001
Chloride	Semi-Annual	1	1,1,2,2 Tetrachloroethane	Annual	0.001
Alkalinity	Semi-Annual	10	1,2,3-Trichlorobenzene	Annual	0.005
Sulfate	Semi-Annual	2	1,2,3-Trichloropropane	Annual	0.001
Arsenic	Annual	0.001	1,2,3-Trimethylbenzene	Annual	0.001
Barium	Annual	0.005	1,2,4-Trichlorobenzene	Annual	0.005
Cadmium	Annual	0.0002	1,2,4-Trimethylbenzene	Annual	0.001
Chromium	Annual	0.001	1,3,5-Trimethylbenzene	Annual	0.001
Hexavalent Chromium	Annual	0.005	1,2-Dibromomethane	Annual	0.001
Lead	Annual	0.001	1,2-Dibromo-3-chloropropane	Annual	0.005
Mercury	Annual	0.0002	1,4-Dichloro-2-butene	Annual	0.005
Selenium	Annual	0.001	Tetrachloroethane	Annual	0.001
Silver	Annual	0.0002	Tetrachloroethene	Annual	0.001
Copper	Annual	0.001	1,1,2-Trichloroethane	Annual	0.001
Nickel	Annual	0.002	1,1,1-Trichloroethane	Annual	0.001
Total Cyanide	Annual	0.005	Trichloroethene	Annual	0.001
Acetone	Annual	0.02	Trichlorofluoromethane	Annual	0.001
Acroylonitrile	Annual	0.005	Vinyl Chloride	Annual	0.001
Bromodichloromethane	Annual	0.001	Methylene Chloride	Annual	0.005
Bromochloromethane	Annual	0.001	Methyl Iodide	Annual	0.001
Bromoform	Annual	0.001	Methyl Tertiary Butyl Ether	Annual	0.001
Bromomethane	Annual	0.005	Methyl Ethyl Ketone	Annual	0.005
Bromobenzene	Annual	0.001	4-Methyl-2-Pentanone	Annual	0.005

MDWTP SECSA Monitoring Parameters (cont'd)

Parameter	Monitoring Frequency	Detection Limit (mg/L)	Parameter	Monitoring Frequency	Detection Limit (mg/l)
Carbon Disulfide	Annual	0.001	n-Butylbenzene	Annual	0.001
Carbon Tetrachloride	Annual	0.001	n-Propylbenzene	Annual	0.001
Chlorobenzene	Annual	0.001	Styrene	Annual	0.001
Chloroethane	Annual	0.005	Tertiary Butyl Alcohol	Annual	0.05
Tetrahyrofuran	Annual	0.005	Tertiary Butyl Benzene	Annual	0.001
Acenapthene	Annual	0.001	Hexachlorocyclopentadiene	Annual	0.01
Acenapthylene	Annual	0.001	Aniline	Annual	0.001
Benzidene	Annual	NA	Indeno (1,2,3-cd) pyrene	Annual	0.002
Benzo(ghi)perylene	Annual	0.001	Isophorone	Annual	0.001
Benzoic Acid	Annual	NA	2-Methylnapthalene	Annual	0.005
Benzyl alcohol	Annual	0.05	2-Nitroaniline	Annual	0.02
Bis (2-chloroethoxy) methane	Annual	0.002	3-Nitoraniline	Annual	0.2
Bis (2-chloroethyl) ether	Annual	0.001	4-Nitroaniline	Annual	0.02
Bis (2)chloroisopropyl) ether	Annual	0.001	Nitrobenzene	Annual	0.002
Bis (2-ethylhexyl) phthalate	Annual	0.005	N-Nitrosodiphenylamine	Annual	0.002
4-Bromo phenyl ether	Annual	0.002	N-Nitroso-di-n-propylamine	Annual	0.002
Butyl benzyl phthalate	Annual	0.005	1,2,4-Trichlorobenzene	Annual	0.002
4-Chloroaniline	Annual	NA	4-Chloro-3-methylphenol	Annual	0.005
2-chloronapthene	Annual	0.002	2-Chlorophenol	Annual	0.01
4-Chlorophenyl phenyl ether	Annual	0.001	2,4-Dichlorophenol	Annual	0.01
Dibenzofuran	Annual	0.004	2,4-Dimethylphenol	Annual	0.005
Di-n-butyl phthalate	Annual	0.005	4,6-Dinitro-2-methylphenol	Annual	NA
1,2-Dichlorobenzene	Annual	0.001	2,4-Dinitrophenol	Annual	0.025
1,3-Dichlorobenzene	Annual	0.001	2-Methylphenol	Annual	0.01
1,4-Dichlorobenzene	Annual	0.001	3-Methylphenol	Annual	0.02
3,3'-Dichlorobenzene	Annual	NA	4-Methylphenol	Annual	0.02
Diethyl phthalate	Annual	0.005	2-Nitrophenol	Annual	0.005
Dimethyl pthalate	Annual	0.005	4-Nitrophenol	Annual	0.025
2,4-Dinitrotoluene	Annual	0.005	Pentachlorophenol	Annual	0.02
2,6-Dinitrotoluene	Annual	0.005	Phenol	Annual	0.005
Di-n-octyl phthalate	Annual	0.005	Pyridine	Annual	0.02
Fluoranthene	Annual	0.001	2,4,5-Trichlorophenol	Annual	0.005
Hexachlorobenzene	Annual	0.001	2,4,6-Trichlorophenol	Annual	0.004
Hexachlorobutadiene	Annual	0.001			

B5.A.4(B) GROUNDWATER MONITORING SYSTEM
[R 299.9612 and 40 CFR §§264.97(a)(2), (b), and (c) and 264.98(b)]

See Section B5.A.3(a).

B5.A.4(C) BACKGROUND CONCENTRATION VALUES FOR PROPOSED PARAMETERS
[R 299.9612 and 40 CFR §§264.98(c) and 264.97(g)(1) and (2)]

See Sections B5.A.3(b) and (c).

B5.A.4(D) PROPOSED SAMPLING AND ANALYSIS PROCEDURES
[R 299.9506(3)(e) and R 299.9612 and 40 CFR §§264.97(d), (e), and (f) and 264.98(d), (e), and (f)]

See Sections B5.A.3(a) and (b).

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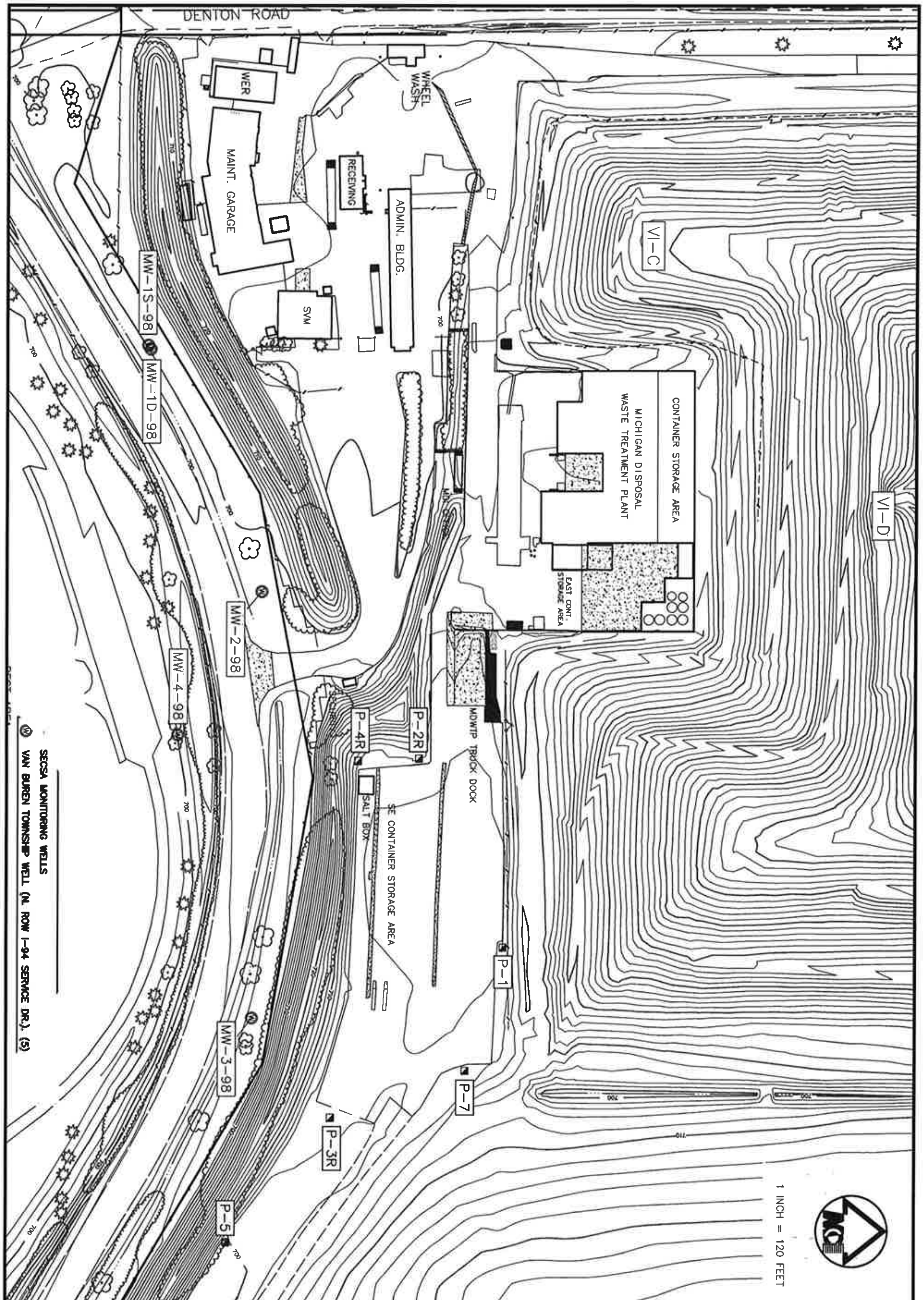
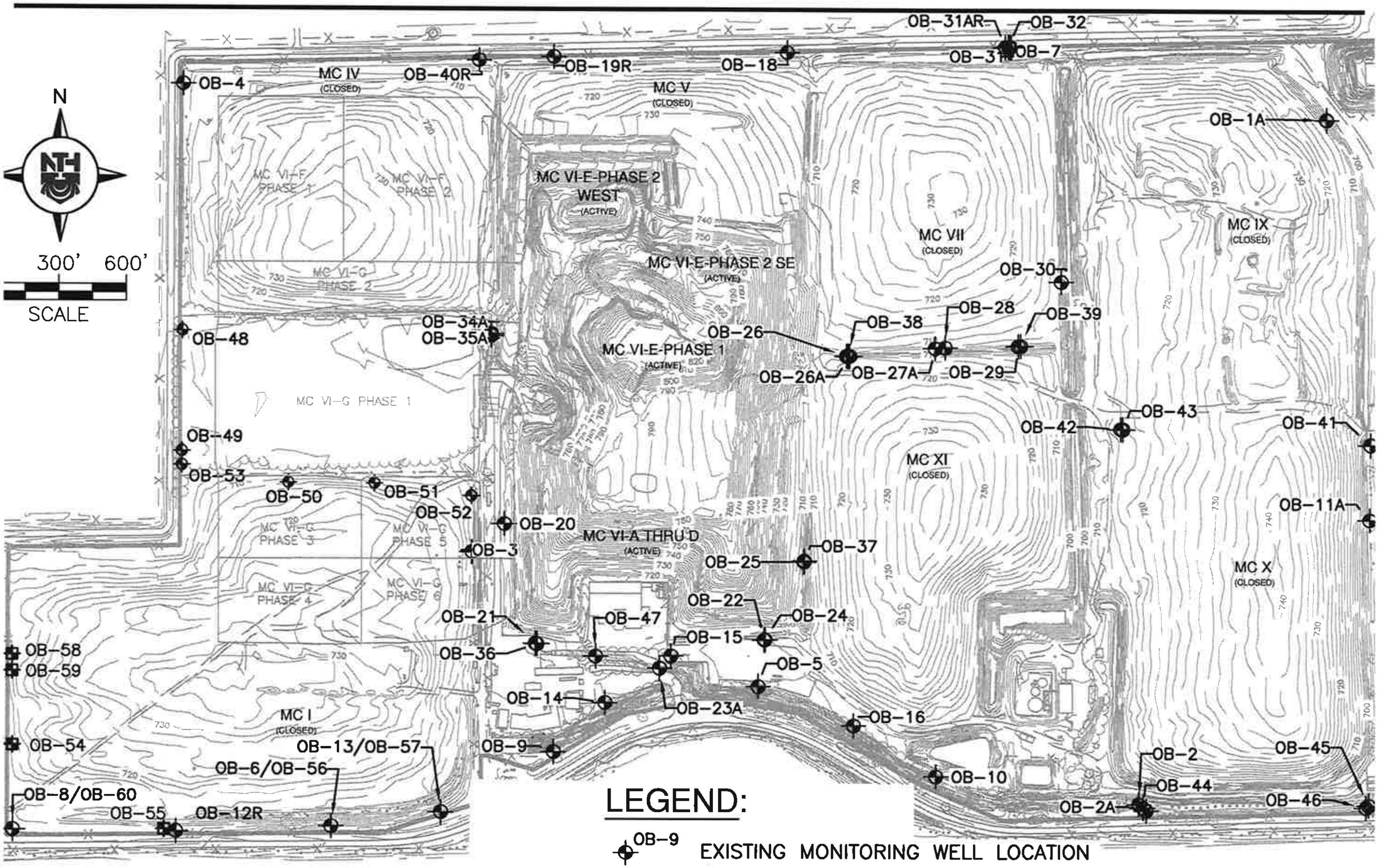


JOB #: **05247**	
DATE: 8/14/09	
SHEET 1 OF 1	
SCALE: 1" = 120'	
CADD: DAG	
S2-SECSA_PZ	

WAYNE DISPOSAL SITE NO. 2

ATTACHMENT A–2 –MONITORING WELL LOCATION MAP
SOUTHEAST CONTAINER STORAGE AREA (SECSA)

MIDWESTERN CONSULTING
Civil, Environmental and Transportation Engineers
Planners, Surveyors
Landscape Architects
3815 Plaza Drive
Ann Arbor, Michigan 48108
Phone: 734.995.0200
Fax 734.995.0599



LEGEND:

- OB-9 EXISTING MONITORING WELL LOCATION
- OB-54 PROPOSED MC VI F/G WELL LOCATIONS
- 710 EXISTING TOPOGRAPHIC CONTOUR

NTH PROJECT No.: 13060921-06	DESIGNED BY: DLP	CHECKED BY: ACE	DRAWING SCALE: AS SHOWN	NTH Consultants, Ltd. Infrastructure Engineering and Environmental Services	WAYNE DISPOSAL, INC. SITE NO. 2	GROUNDWATER MONITORING WELL LOCATION MAP	ATTACHMENT: A
CAD FILE NAME: 060921-WLM	DRAWN BY: KRO	INCEPTION DATE: 11/16/09	PLOT DATE: 10/15/2014		VAN BUREN TWP., WAYNE COUNTY, MICHIGAN		

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B5.B AMBIENT AIR MONITORING PROGRAM

[R 299.9611(2)(c) and (4)]

B5.B.1 Sampling and Analysis Plan

[R 299.9611(2)(a)]

A sampling and analysis plan for ambient air monitoring for *MDWTP and WDI* is included in the QA/QC Plan. The sampling and analysis plan was prepared in accordance with the requirements specified in R 299.9611(2)(a). All sampling and analysis performed pursuant to this application will be consistent with the QA/QC Plan. All samples for the purpose of environmental monitoring will be collected, transported, stored, and disposed by trained and qualified individuals in accordance with the QA/QC Plan.

The *MDWTP and WDI* facility will conduct ambient air monitoring to demonstrate compliance with the provisions of Part 55 of Act 451 and will be utilized to characterize the air quality associated with both MDWTP (MID 000724831) and WDI (MID 048090633) Site #2.

B5.B.1(a) Samplers and Location

Ambient air quality will be monitored at seven stations around the perimeter of the site, one of which is a collocated station. These locations are noted on the map attached. All seven sites are equipped with a polyurethane foam (PUF) sampler, high volume Total Suspended Particulate (TSP) sampler, and a sorbent tube sampler, with the collocated station having two of each sampling apparatus. Sampling equipment is inspected before and after use.

B5.B.1(b) Schedule

The sampling schedule for the high volume samplers is every 12th day for 24 hours (to coincide with the USEPA national sampling schedule. When required, resampling will occur on an alternate sampling day as designated by the national sampling schedule.

B5.B.1(C) Sampling and Analysis

PCB sampling will be conducted using a high volume PUF sampler and analyzed and reported as total PCBs. Sampling for the PCB compounds will be conducted in adherence to the USEPA's Toxic Organic Compendium Methods TO-4A or TO-10A. The PUF samplers will operate at an air sampling rate of approximately 200 to 280 lpm.

Metal concentrations will be determined from the samples collected in a high volume TSP sampler. The sampling for multi-metals will adhere to the requirements of 40 CFR Part 50, Appendix G for the determination of lead. All sections referenced by Part 50, Appendix G will likewise be followed. Then analysis will be performed using USEPA Reference Methods for lead and the other metals listed in the attached table to this monitoring plan. Quality control and assurance requirements specified in the method will be incorporated in the sampling protocol. Samples will be collected with a nominal flow rate of 50 cfm $\pm$ 10 cfm.

VOC's will be sampled utilizing a system of sorbent tubes capable of effectively collecting the listed compounds in the attached table. A constant flow sampling pump is operated at approximately 0.10 liters per minute (lpm). Samples will be collected at a flow rate adequate to reach the required limits of detection. Sampling will be conducted in adherence to the USEPA's Toxic Organic Compendium Method, TO-17 for solid sorbent tubes.

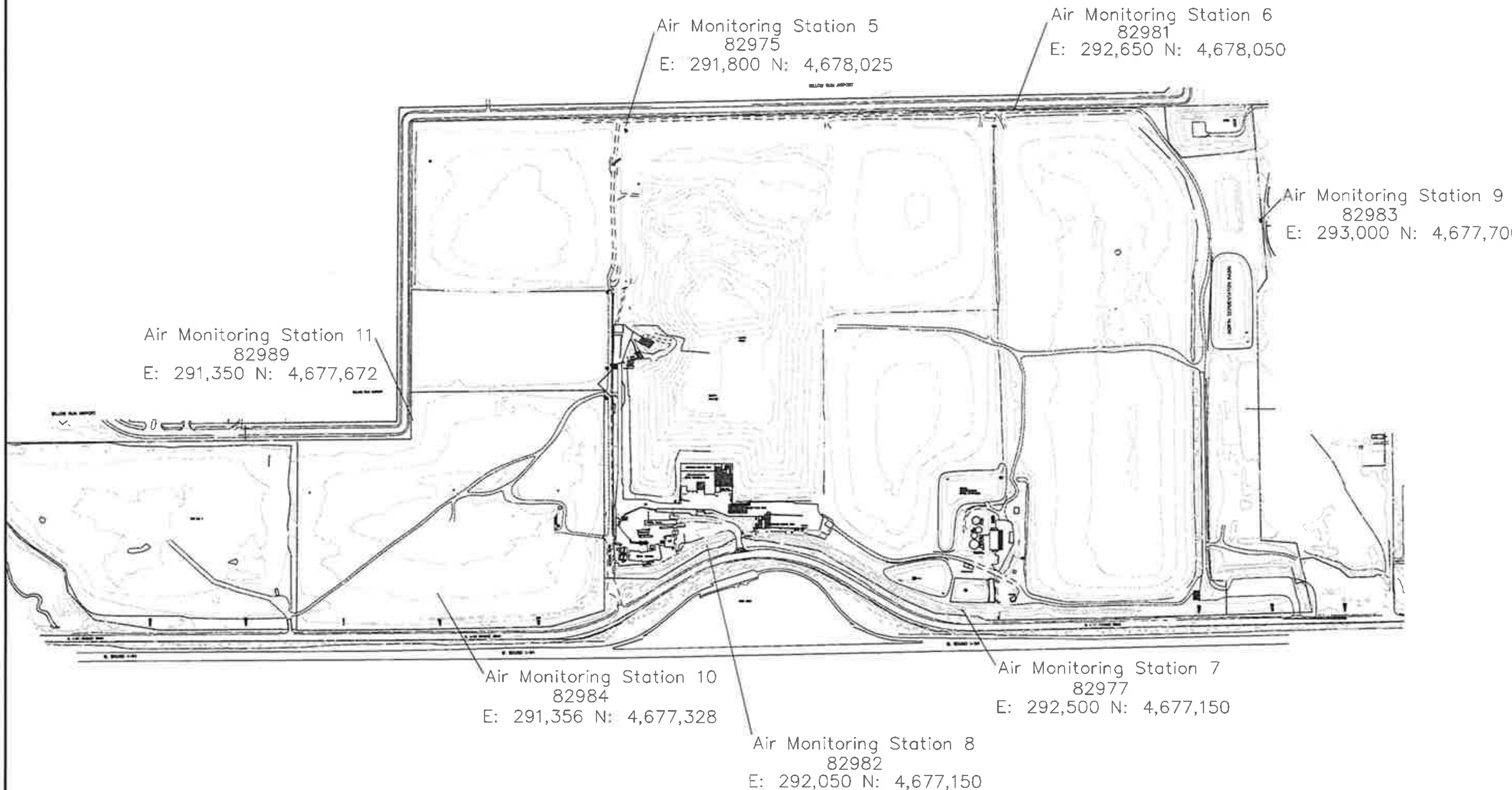
B5.B.1(D) Monitoring Parameters

The table below provides a list of parameters monitor and the minimum detection limit.

WDI & MDWTP - AMBIENT AIR - MONITORING PARAMETERS (METALS and PARTICULATES)	
COMPOUND	**DETECTION LIMIT (ug/m^3)**
CADMIUM	0.005
CHROMIUM	0.009
LEAD	0.025
TSP	-
WDI & MDWTP – AMBIENT AIR - MONITORING PARAMETERS (ORGANIC COMPOUNDS)	
COMPOUND	**DETECTION LIMIT (ug/m^3)**
BENZENE	0.04
CARBON TETRACHLORIDE	0.25
CHLOROFORM	0.05
ETHYLBENZENE	1
METHYLENE CHLORIDE	1
1,1-DICHLOROETHANE	1
1,1,1-TRICHLOROETHANE	1
TETRACHLOROETHENE	0.1
TRICHLOROETHENE	0.1
TOLUENE	1
XYLENE (TOTAL)	1
PCBs (TOTAL)	0.02

B5.B.1(E) Quality Assurance

On each run day, samples from the collocated site shall be analyzed and reported to the MDEQ for the assessment of sampler precision. One sample day per month, one blank sorbent tube and metals filter shall accompany the samples to the collocated site , not have air pulled through it, then submitted to the laboratory as a "trip blanks". All laboratory quality assurance, such as the analysis of blanks and standards, shall be made available to the MDEQ upon request for the determination of accuracy. If any parameter that is analyzed by the laboratory and determined to be non-detectable, the value of the method detection limit for that compound divided by 2 (MDL/2) shall be reported. Staff from the MDEQ may audit the ambient air monitoring program, files, and samplers at their discretion.



THE ENVIRONMENTAL QUALITY COMPANY

WAYNE DISPOSAL INC.
WAYNE DISPOSAL INC

AIR MONITORING STATIONS

PROJ. FILE WDI
DATE 10/31/13
SHEET ___ OF ___
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REVISIONS

B5.C ANNUAL SOIL MONITORING PROGRAM

[R 299.9611(2)(d) and (4)]

B5.C.1 Sampling and Analysis Plan

[R 299.9611(2)(a)]

MDWTP is requesting a requesting a waiver from the soil monitoring requirements of R 299.9611(2)(d). Soil monitoring is not needed because the entire area is paved, and any areas designated for the storage of liquid waste has secondary containment in the form of concrete floors, curbing and sumps to collect precipitation as well as any spills. All active waste treatment or processing occurs within the MDWTP, which is inside a building. The treatment tanks contain leak detection and the treated concrete floors drain to blind sumps that are cleaned out if any liquids accumulate. Thus there are no areas where spills would occur onto an unpaved area. In the unlikely event that any waste or waste constituents penetrate the pavement, the entire area (excepting the SECSA) is underlain by either clay fill or native clay till. Therefore there would be very limited ability for transport in any direction. As described above, the SECSA, which is either asphalt (for solid waste) or concrete with secondary collection (for liquid waste) is underlain by surficial sand that is monitored by shallow groundwater wells. In addition, the closure plan requires sampling the soil beneath the pavement at the time of closure.